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ABSTRACT

This supplemental guide to the interpretation of the Armed Services Vocational Aptitude Battery (ASVAB) results in local guidance and counseling programs is designed for use by high school counselors, service test administrators, and educational specialists. This addendum to the original study presents expectancy tables for 28 civilian vocational-technical courses in which 5,211 students were enrolled in 25 high schools situated in the northeast, midwest and far west regions of the country. Also included in this note is a suggested ASVAB interpretative guide. School samples were obtained through voluntary participation. The investigators are indebted to all participating counselors, administrative personnel, principals, and students. This document is an abstract of a more comprehensive treatment of the data contained in Armed Forces Vocational Testing Group (AFVTG) Technical Research Report 74-5 (January 1975) (ED 109 258). (Author/DEP)

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TECHNICAL RESEARCH NOTE 75-1

ASVAB EXPECTANCY TABLES

ADDENDUM TO

"A CONCURRENT VALIDITY STUDY RELATING THE ARMED SERVICES VOCATIONAL APTITUDE BATTERY TO SUCCESS IN HIGH SCHOOL VOCATIONAL-TECHNICAL COURSES"

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JANUARY 1975

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is a suggested ASVAB interpretative guide. School samples were obtained through voluntary participation. The investigators are indebted to all participating counselors, administrative personnel, principals and students. This technical research note is an abstract of a more comprehensive treatment of the data contained in Armed Forces Vocational Testing Group (AFVTG) Technical Research Report 74-5 (January 1975). Work performed in support of this research was conducted as a sub-part of AFVTG research project unit 117 under guidelines prescribed through Department of Defense Directive 1304.12 (December 1972).

JANUARY 1975

ERRATA SHEET

FOR TECHNICAL RESEARCH NOTE 75-1

Bottom of second column, page 2 - "Appendix 3 provides . . . ." should read "Appendix 2 provides . . . . ."

On page 6 - "Composite = AR + WK + 1/5 C for Business Occupations" should read "Composite = AR + WK + 1/5 CS."

On page 8, "Composite = MM = MC + 2SI for Diesel Mechanic" should read "Composite = MM = MC + 2AI."

Top of second column, page 20 - "Therefore, a female who has a raw score of 7 in Automotive Information is in the 37th percentile for her sex but only in the 19th percentile . . . . ." should read "Therefore, a female who has a raw score of 7 in Automotive Information is in the 26th percentile for her sex but only in the 14th percentile . . . . ."

In Figure 2. Sample Counselor Printout on page 21, the subtest Sl, Al and El should read SI, AI and EL.

PREFACE

This Technical Research Note, a supplemental guide to the interpretation of the Armed Services Vocational Aptitude Battery (ASVAB) results in local guidance and counseling programs, is designed for use by high school counselors, service test administrators and educational specialists.

This addendum to the original study presents Expectancy Tables for 28 civilian vocational-technical courses in which 5,211 students were enrolled in 25 high schools situated in the northeast, mid-west and far west regions of the country. Also included in this note is a suggested ASVAB interpretative guide. School samples were obtained through voluntary participation. The investigators are indebted to all participating counselors, administrative personnel, principals and students.

This technical research note is an abstract of a more comprehensive treatment of the data contained in Armed Forces Vocational Testing Group (AFVTG) Technical Research Report 74-5 (January 1975). Work performed in support of this research was conducted as a sub-part of AFVTG research project unit 117 under guidelines prescribed through Department of Defense Directive 1304.12 (December 1972).

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ADDENDUM TO

"A CONCURRENT VALIDITY STUDY RELATING THE ARMED SERVICES VOCATIONAL APTITUDE BATTERY TO SUCCESS IN HIGH SCHOOL VOCATIONAL-TECHNICAL COURSES"

I. PROCEDURES THAT MAY BE USED TO INTERPRET ASVAB-2 TEST SCORES

In order to effectively use the results of any measurement device for evaluation purposes, a counselor should consider as much demographic and evaluative data as possible to obtain an accurate and realistic profile of each student. The data presented herein may be used to counsel students primarily for making decisions in the area of vocational selection. It is assumed, therefore, that the data will be complemented by knowledge of the individual's affective data in order for the results to be as meaningful as possible.

The ASVAB-2 results, as with any test, are first obtained in raw score form. The raw score reported indicates the number of questions answered correctly (with a possible correction for guessing) on that particular subtest for that particular student. Raw scores are made available so that counselors may collect data for their school; however, a raw score is meaningless unless compared with the scores received by other students and the maximum possible raw score. Knowing the number of questions per subtest, the counselor can judge the relative performance of that student on that subtest. Data such as this may be used by the counselor to build a statistical base of the test for his particular school.

Raw scores, however, have many limitations – for example, they are not amenable for comparing performance on one test with performance on another. The raw score also lacks the power to identify an individual's standing on a particular test. In order to provide a better understanding of test results, raw scores are converted into some relative measure, such as percentiles, "Z" scores or some other standard score, all of which require a normative sample. Each of these relative measures is designed to serve a dual purpose: (1) it identifies the relative standing of an individual, permitting an evaluation of his performance in reference to other persons; (2) it provides a measure whereby comparisons of an individual's performance may be made on different tests. In order to facilitate interpretations and computations, percentiles are most often used as performance indicators in the educational environment. The relative measure used to report ASVAB performance is a percentile score expressed in terms of the percentage of persons in a particular sample who fall below a given raw score.

ASVAB raw scores are converted to percentiles based upon a national sample of some 770,000 students, national percentile by grade and national percentile by grade/sex. National percentiles may be used when guiding students who will be competing for highly competitive jobs that are being sought by potential employees from a large geographical area. National percentiles by grade may be used to indicate specific occupations where the training normally begins with a particular grade. These scores may be compared with those of persons who have succeeded in a similar course. National percentiles by grade/sex are recommended when aiding a student in selecting vocational choices that are historically unisexual. For instance, if a female wishes to become a mechanic, she may have very low scores compared to the average male; however, when compared to other females, she may score very high. Her scores compared to other female scores will probably give the best indication of her true aptitude. Whereas her national percentile score will be an indication of the relative disadvantage she may experience at the beginning of the vocational training due to the ken of her peer group in a vocation which is predominantly male. Decisions such as this should be made within a sex group. As mentioned previously, affective data should also be taken into consideration when such decisions are made.

The score format for ASVAB scores is presented in several ways to facilitate interpretation of specific data; i.e., printouts and tables. Tables that contain score distributions by grade

and grade by sex are relatively easy to interpret. A person obtaining a specific raw score may be said to have done better on that test than some of his peers as indicated by his percentile equivalent score. If one looks closely at Automotive Information, one could conclude that females did not generally possess the ability to perform activities that are specifically called for in the automotive trades. These distributions are typically skewed in the positive direction, i.e., the mean is greater than the median, whereas the male distribution progressively approaches a relatively normal curve. Distribution tables on subtests like Automotive Information do not indicate bias against females. To preclude a biased interpretation, these scores ought to be viewed as male generally scoring higher without the implication that they will also perform better in these areas.

II. ASVAB EXPECTANCY TABLES

The expectancy tables in this report are presented to the counselor as an aid to identify students whose performance will probably fall in a particular grade category. An expectancy table presents, in tubular form, the probabilities of obtaining different course grades for students who obtain a particular raw score, within a class interval, on the ASVAB. Each table was prepared from data collected from 5,211 students in 28 civilian vocational-technical courses who took ASVAB-2 during the 1973-74 school year. An example of the expectancy table for students in the Appliance Repair course is shown in Table 1. Table 1.

Referring to Table 1, the first line at the top of each page indicates the course represented by data in the expectancy table. The second line indicates the ASVAB composites that offer the highest correlation between predictor and criterion variables (i.e., course grades). The first column shows the ASVAB composite raw score divided into class intervals of ten. The remaining entries in each row of the table indicate the percentage of cases within each test score interval that received each grade at the end of the course. Referring to the above expectancy table of Appliance Repair, a student with a raw score of 68 would fall within the interval 66-75. A counselor could conclude that the probability of obtaining an A grade is nine out of 100; the probability of obtaining a B, 37 out of a 100; the probability of obtaining a C, 41 out of 100, etc. The mean and standard deviation are presented at the bottom of each expectancy table for both the composite and vocational-technical course grade. An r (Pearson Product – Moment Correlation Coefficient) and the N are also presented. The data is limited to the sample which comprised the original study. (Refer to AFVTG Technical Research Report 74-5.) It should be made clear that, within the limitations of the data as defined by the original sample, the percentages shown in each expectancy table represent the best estimates of the probability that a student will receive a given course grade. The results should not be variegated to any great extent.

The expectancy tables as contained in Appendix 1 should facilitate the counseling process in the high school years by indicating in which course a student would have a better chance to succeed. In conjunction with affective and academic data, a more accurate decision is possible by the student who seeks personal fulfillment in areas of the world of work.

The expectancy tables for ASVAB-2 were developed from research accomplished to date by the Armed Forces Vocational Testing Group. This data is restricted to those individuals who would "normally" migrate to the courses indicated. That is, each course has, by societal criteria, certain role expectations by sex, performance, etc. Therefore, it is necessary to identify the "other" qualified individuals who would like to enter a job field not "normally" associated with his or her sex. For these people, the interpretation of ASVAB scores by the counselor is not a complex process with the information that is presently available. Appendix 3 provides a working guide for the counseling process. This appendix uses data contained in the Expectancy Tables and ASVAB normative statistics (contained in AFVTG Technical Research Report 74-3) as the basis for a general interpretative guide.

Table 1

EXPECTANCY TABLE

COURSE: APPLIANCE REPAIR
COMPOSITE=GM=SP+2SI

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	1	12	41	37	9
56-65	2	19	46	28	5
46-55	4	27	47	20	2
36-45	8	36	42	13	1
26-35	14	42	36	7.6	0.4
16-25	22	47	26	4.9	0.1
6-15	33	46	19	1.95	0.05
0-5	42	43	14	.98	0.02
	MEAN	σ	r		
COMPOSITE	39.38	14.25	0.42		
VOC-TEC	2.13	0.88			
N	62				

Appendix I

ASVAB EXPECTANCY TABLES

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

APPLIANCE REPAIR

COMPOSITE=GM=SP+2SI

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	1	12	41	37	9
56-65	2	19	46	28	5
46-55	4	27	47	20	2
36-45	8	36	42	13	1
26-35	14	42	36	7.6	0.4
16-25	22	47	26	4.9	0.1
6-15	33	46	19	1.95	0.05
0-5	42	43	14	.98	0.02

	MEAN	σ	r
COMPOSITE	39.38	14.25	0.42
VOC-TEC	2.13	0.88	
N	62		

AUTO SERVICE

COMPOSITE=AI+TK+1/3CS

ASVAB COMPOSITE RAW SCORES	COURSE GRADE F	D	C	B	A
81-83	0.08	2	19	44	35
71-80	0.2	5	25	45	25
61-70	0.7	9	36	40	14
51-60	2	14	47	30	7
41-50	6	28	44	19	3
31-40	12	38	38	11	0.9
21-30	23	44	28	5	0.3
11-20	37	43	18	2	.07
1-10	54	36	9	.7	.02

	MEAN	σ	r
COMPOSITE	46.3	11.5	0.44
VOC-TEC	2.40	0.95	
N	476		

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

BODY & FENDER

COMPOSITE=MM=MC+2AI

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	1	16	49	30	4
56-65	2	20	50	25	3
46-55	3	25	49	21	2
36-45	4	30	48	17	1
26-35	6	35	45	13.2	0.8
16-25	8	39	43	9.5	0.5
6-15	11	43	39	6.7	0.3
0-5	14	45	35	5.8	0.2
	MEAN	σ	r		
COMPOSITE	40.71	14.08	0.24		
VOC-TEC	2.32	0.77			
N	129				

BUSINESS OCCUPATIONS

COMPOSITE=AR+WK+1/5C

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
61-70	.02	0.98	9	35	55
51-60	.2	2.8	19	42	36
41-50	1	7	32	41	19
31-40	2	17	41	32	8
21-30	7	29	42	19	3
11-20	16	39	35	9.2	0.8
1-10	31	44	13	1.8	0.2
	MEAN	σ	r		
COMPOSITE	35.96	9.15	0.42		
VOC-TEC	2.82	0.97			
N	265				

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

CARPENTRY

COMPOSITE=GM=SP+2SI

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	1	11	38	37	13
56-65	2	17	43	31	7
46-55	4	25	37	30	4
36-45	8	33	41	16	2
26-35	14	39	36	10.2	0.8
16-25	22	44	28	5.7	0.3
6-15	33	43	21	2.9	0.1
0-5	41	41	16	1.95	0.05
	MEAN	σ	r		
COMPOSITE	47.84	11.11	0.33		
VOC-TEC	2.41	0.91			
N	258				

CLERICAL PROCESSES

COMPOSITE=AR+WK+1/5CS

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
61-70	0.1	1.9	16	39	43
51-60	1	6	27	.41	25
41-50	2	14	38	34	12
31-40	6	26	45	18	5
21-30	15	36	36	12	1
11-20	29	41	25	4.7	0.3
1-10	48	37	13	1.93	0.07
	MEAN	σ	r		
COMPOSITE	36.33	8.15	0.39		
VOC-TEC	2.50	0.97			
N	340				

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

COSMETOLOGY

COMPOSITE=GT=AR+WK

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
41-50	0.01	0.99	14	46	39
31-40	0.08	3.92	28	48	20
21-30	0.5	10.5	42	39	8
11-20	2	23	49	24	2
1-10	7	42	43	11.4	0.6
	MEAN	σ	r		
COMPOSITE	22.15	7.10	0.37		
VOC-TEC	2.82	0.81			
N	159				

DIESEL MECHANIC

COMPOSITE=MM=MC+2SI

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	2	21	47	26	4
56-65	4	29	46	19	2
46-55	7	36	43	13	1
36-45	12	42	37	8.5	0.5
26-35	18	46	31	4.8	0.2
16-25	26	48	23	2.92	0.08
6-15	36	48	16	1.97	0.03
0-5	44	43	12.1	.88	0.02
	MEAN	σ	r		
COMPOSITE	47.02	14.17	0.36		
VOC-TEC	2.08	0.85			
N	51				

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

DATA PROCESSING

COMPOSITE=SP+MC+EL

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	0.2	2.8	16	37	44
56-65	0.4	4.6	22	39	34
46-55	1	7	27	39	26
36-45	1	12	32	37	18
26-35	3	15	37	32	13
16-25	5	21	39	27	8
6-15	7	27	39	22	5
0-5	10	31	38	18	3
	MEAN	σ	r		
COMPOSITE	37.35	14.04	0.33		
VOC-TEC	3.06	1.03			
N	159				

DRAFTING

COMPOSITE=AR+SP

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
41-50	1	7	30	41	21
31-40	2	16	40	32	10
21-30	6	28	41	21	4
11-20	15	38	35	11	1
1-10	29	42	24	4.8	0.2
	MEAN	σ	r		
COMPOSITE	29.28	8.93	0.40		
VOC-TEC	2.57	0.99			
N	373				

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

ELECTRICAL TRADES

COMPOSITE=AR+TK+EL

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	1	7	35	42	15
56-65	1	14	41	35	9
46-55	3	19	45	26	5
36-45	6	30	43	19	2
26-35	11	37	31	12	1
16-25	18	43	32	6.4	0.4
6-15	28	45	24	2.9	0.1
0-5	37	44	17	1.95	0.05
	MEAN	σ	r		
COMPOSITE	47.04	12.02	0.37		
VOC-TEC	2.51	0.90			
N	468				

ELECTRONIC TRADES

COMPOSITE=AR+TK+EL

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	1	12	41	29	17
56-65	3	15	38	32	12
46-55	5	19	40	27	7
36-45	7	27	40	21	5
26-35	11	30	39	17	3
16-25	17	37	33	12	1
6-15	24	39	29	7.2	0.8
0-5	30	40	24	5.6	0.4
	MEAN	σ	r		
COMPOSITE	49.12	11.79	0.28		
VOC-TEC	2.60	1.00			
N	431				

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

FOOD SERVICE

COMPOSITE=CL=WK+1/3CS

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
49-58	0.02	0.98	9	37	53
39-48	0.09	2.91	19	44	34
29-38	0.4	6.6	32	43	18
19-28	2	15	42	33	8
9-18	5	27	44	21	3
0-8	13	39	37	10.2	.8
	MEAN	σ	r		
COMPOSITE	27.94	8.00	0.37		
VOC-TEC	3.02	0.91			
N	250				

GRAPHIC ARTS

COMPOSITE=AR+SP

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
41-50	1	6	28	40	25
31-40	2	12	36	35	15
21-30	4	21	39	28	8
11-20	9	29	39	20	3
1-10	16	37	34	12	1
	MEAN	σ	r		
COMPOSITE	27.53	8.50	0.34		
VOC-TEC	2.94	0.90			
N	159				

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

HEALTH OCCUPATIONS

COMPOSITE=CL=WK+1/3CS

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
49-58	.01	0.3	5.7	34	60
39-48	.08	1.92	18	43	37
29-38	1	9	35	40	15
19-28	4	24	44	24	4
9-18	14	40	36	9.2	.8
0-8	34	47	19	2.9	.1
	MEAN	σ	r		
COMPOSITE	31.10	6.28	0.51		
VOC-TEC	3.00	0.74			
N	170				

HORTICULTURE

COMPOSITE=GT=AR+WK

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
41-50	0.3	3.7	21	39	36
31-40	1	9	29	39	22
21-30	3	16	37	32	12
11-20	7	25	40	22	6
1-10	14	34	36	14	2
	MEAN	σ	r		
COMPOSITE	22.91	8.43	0.33		
VOC-TEC	2.77	1.03			
N	64				

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

JOURNALISM

COMPOSITE=SP+MC+EL

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	.01	.01	1	13	86
56-65	0.01	0.1	3.9	37	59
46-55	.01	1	17	55	27
36-45	0.1	5.9	41	46	7
26-35	1	21	56	21	1
16-25	7	46	41	5.9	0.1
6-15	45	55	17.2	0.8	0.01
0-5	49	44	6.9	0.1	.01

	MEAN	σ	r
COMPOSITE	39.08	12.10	0.71
VOC-TEC	3.00	0.94	
N	36		

MACHINE SHOP

COMPOSITE=TK+AI

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
41-50	1	11	38	38	12
31-40	2	18	43	31	6
21-30	5	25	45	22	3
11-20	9	34	41	15	1
1-10	39	43	16	1.94	.06

	MEAN	σ	r
COMPOSITE	27.83	9.76	0.33
VOC-TEC	2.51	0.90	
N	345		

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

MAINTENANCE MECHANIC

COMPOSITE=GM=SP+2SI

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	0.05	1.95	17	44	37
56-65	0.3	5.7	33	42	19
46-55	1	15	43	34	7
36-45	5	28	45	2	2
26-35	13	41	37	8.4	0.6
16-25	28	46	23	2.9	0.1
6-15	49	39	11.2	0.78	0.02
0-5	65	30	4.8	0.20	0.01

	MEAN	σ	r
COMPOSITE	37.73	12.30	0.56
VOC-TEC	2.27	0.99	
N	56		

MASONRY

COMPOSITE=TK+SP+1/3CS

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
74-83	0.1	3.9	32	47	17
64-73	0.3	6.7	38	43	12
54-63	0.5	10.5	44	38	7
44-53	1	16	47	31	5
34-43	2	21	50	24	3
24-33	3	27	50	18	2
14-23	5	34	47	13.2	0.8
4-13	9	40	42	8.6	0.4
0-3	11	44	38	6.7	0.3

	MEAN	σ	r
COMPOSITE	38.96	10.02	0.23
VOC-TEC	2.59	0.77	
N	116		

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

METAL WORKING

COMPOSITE=GM=SP+2SI

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	1	12	42	37	8
56-65	1	16	45	32	6
46-55	2	20	47	27	4
36-45	3	25	47	22	3
26-35	5	29	47	17	2
16-25	7	34	44	14	1
6-15	10	38	41	10.4	0.6
0-5	12	42	37	8.5	0.5
	MEAN	σ	r		
COMPOSITE	47.64	14.15	0.25		
VOC-TEC	2.58	0.82			
N	124				

NURSING

COMPOSITE = GT = AR+WK

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
41-50	0.01	0.03	2.97	34	63
31-40	0.01	0.5	14.5	54	31
21-30	0.05	3.95	38	49	9
11-20	1	18	56	24	1
1-10	5	43	45	5.9	0.1
	MEAN	σ	r		
COMPOSITE	23.39	7.95	0.56		
VOC-TEC	3.03	0.78			
N	31				

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

PAINTING & DECORATING

COMPOSITE = GT = AR+WK

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
41-50	.01	0.03	3.97	38	58
31-40	.01	0.2	8.8	50	41
21-30	.02	2.98	58	29	10
11-20	1	20	57	21.1	0.9
1-10	9	51	37	2.97	0.03
	MEAN	σ	r		
COMPOSITE	29.15	8.25	0.66		
VOC-TEC	3.06	0.84			
N	26				

PLUMBING

COMPOSITE = AI+TK+1/3CS

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
74-83	0.09	1.91	16	40	42
64-73	.4	5.6	25	42	27
54-63	1	11	35	38	15
44-53	3	20	41	29	7
34-43	8	30	41	18	3
24-33	16	39	34	10	1
14-23	29	42	24	4.7	0.3
4-13	45	38	15	1.93	0.07
0-3	56	33	10.1	0.88	0.02
	MEAN	σ	r		
COMPOSITE	45.95	7.99	0.43		
VOC-TEC	2.59	0.72			
N	101				

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

SMALL ENGINE

COMPOSITE = MM = MC+2AI

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	2	13	31	34	20
56-65	4	18	35	30	13
46-55	7	24	36	25	8
36-45	12	29	35	19	5
26-35	18	34	32	13	3
16-25	26	36	27	10	1
6-15	36	36	22	5.3	0.7
0-5	43	35	18	3.6	0.4
	MEAN	σ	r		
COMPOSITE	38.62	13.37	0.34		
VOC-TEC	2.21	1.12			
N	.86				

TAILOR

COMPOSITE = AR+SP+1/5CS

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
61-70	.01	0.1	4	28	68
51-60	.01	0.7	12	43	44
41-50	.01	3	27	48	22
31-40	.6	10	42	39	8
21-30	3	24	48	19	6
11-20	0.5	9	40	9	0.5
1-10	25	48	24	3	0.07
	MEAN	σ	r		
COMPOSITE	23.4	11.1	0.64		
VOC-TEC	2.86	1.05			
N	148				

COURSE: NUMBERS UNDER COURSE GRADE ARE PERCENTS

WOOD-METAL WORKER

COMPOSITE = GM = SP+2SI

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	1	9	29	38	23
56-65	2	12	33	36	18
46-55	2	15	35	34	14
36-45	4	17	38	31	10
36-35	5	22	39	17	7
16-25	7	26	39	23	5
6-15	10	29	39	18	4
0-5	12	32	37	16	3
	MEAN	σ	r		
COMPOSITE	49.90	13.11	0.22		
VOC-TEC	2.85	1.00			
N	185				

WELDING

COMPOSITE = GM = SP+2SI

ASVAB COMPOSITE RAW SCORE	COURSE GRADE F	D	C	B	A
66-75	0.05	1.95	20	46	32
56-65	0.2	5.8	31	45	18
46-55	1	12	43	36	8
36-45	1	25	47	24	3
26-35	7	35	43	14	1
16-25	16	44	36	6.7	0.3
6-15	30	46	22	1.94	0.06
0-5	42	44	13	0.98	0.02
	MEAN	σ	r		
COMPOSITE	42.11	12.30	0.49		
VOC-TEC	2.60	0.92			
N	147				

Appendix 2

SUGGESTED ASVAB INTERPRETATIVE GUIDE

This appendix is in two parts with a summary. Part I is for those occupations which are identified by a current composite. Part II is for those occupations which are identified by a proposed composite different from any current composite.

Part I – Interpretation using current composites.

The following proposed method for interpreting ASVAB-2 scores should be restricted, unless otherwise indicated, to students who express an interest in an occupation which is identified by one of the present composites, NOT a proposed composite.

For maximum understanding of this suggested interpretive hypothesis the counselor should also refer to technical research note 74-3 (Percentile Normative Tables for the Armed Services Vocational Aptitude Battery; 1973-74 School Year Data Base). First, let us look at the GT scale for male and female (p A2-22, AFVTG Technical Research Note 74-3). The mean percentile for males is "slightly" higher with respect to the raw score scale than for females. This is not an uncommon result but an interesting one when considering the literature which indicates that females strive harder and usually get better grades than males. For the Clerical composite (p A2-24), female scores are "slightly" higher than the male scores. For the remaining three composites, male scores are "quite a bit" higher than female scores. For use as an aid in interpretation, this may be illustrated as shown in the schematic in Figure 1.

Figure 1 indicates that males and females have the same general ability – either can perform as well as the other – as measured by the GT scale. Although this is an assumption, it is an assumption which is feasible when considering that the GT scale is comprised of Word Knowledge and Arithmetic Reasoning – two components often associated with ability to perform in general areas.

The Clerical composite illustration in Figure 1 shows that females score slightly higher than males. This is an area in which females would be expected to score higher if we accept the assumption that females in general are taught to be more careful and discerning in their endeavors. They are taught to be precise because of the nature of their perceived roles which require exacting skills, such as sewing, cooking, use of cosmetics, etc.

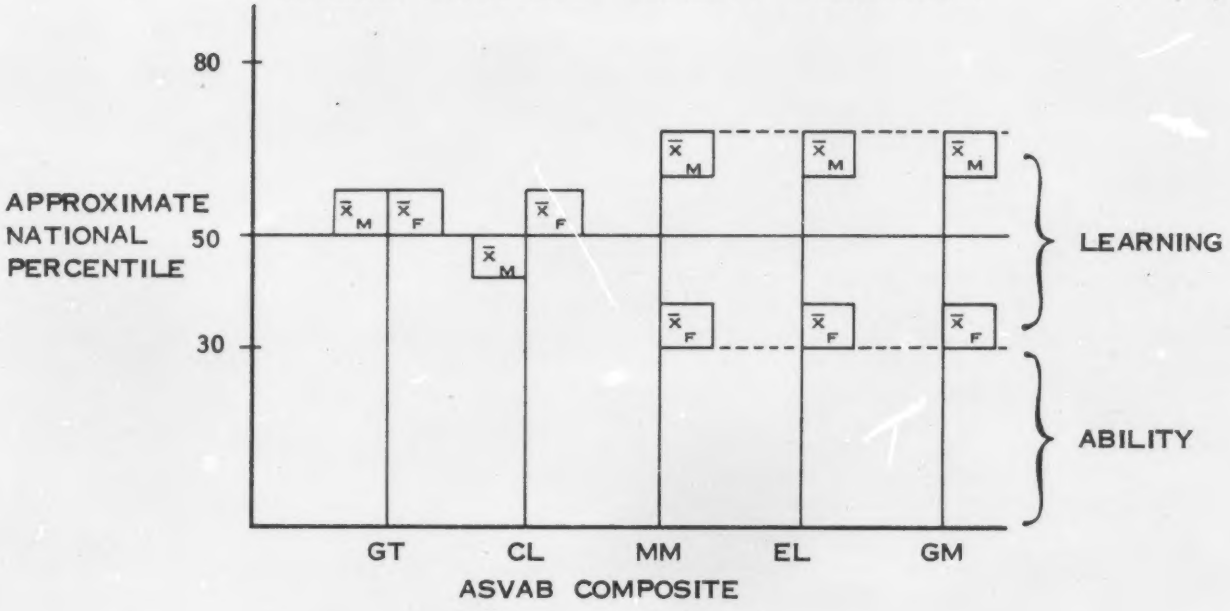
The interpretation of scores within these two composites should not differ too greatly across sex. That is, males and females should perform equally well in both areas. To identify students who would succeed in areas utilizing these composites use either the expectancy tables or take one standard deviation (σ) below the mean to obtain a minimum cut-off score for vocational courses which use performance behavior characterized by either of these two composites. A $\pm 1\sigma$ range would encompass approximately 68% of the students who took the ASVAB-2. When working with the lower end of the standard deviation continuum around -1σ, the counselor should be extremely cautious in advising a student to enter an area based upon a low score unless other factors are taken into consideration such as motivation, interests, values, needs, etc.

The three remaining composites in the theoretical schematic shown in Figure 1 show that males score relatively higher than females. What this infers is that when looking at the national norms for these composites (p A-13; A2-21), Technical Research Note 74-3), males would attain higher percentile ranks than most of the females. However, when viewing the national norms by sex for these composites, the same female who was low with respect to her male counterpart may now place above the mean for females. When interpreting scores in these three areas (MM, EL and GM) for females, a one-half standard deviation (i.e., $-1/2\sigma$) could be used as a lower limit. This arbitrary limit is suggested for females because of their lack of experience in these areas and because of the assumed lack of certain non-cognitive factors, i.e., motivation, interest, etc. This concept is shown in Figure 1.

FIGURE 1

GENERAL ABILITY LEVEL BY ASVAB COMPOSITE

(WHERE: APTITUDE = ABILITY + LEARNING)



The female mean ($\bar{X}_F$) is drawn arbitrarily at the 30% level. This level is suggested to indicate native ability in the three composites, MM, EL and GM. The male mean ($\bar{X}_M$) is drawn arbitrarily at the 65% level. This line indicates, in general, a blending of ability and the learning process for males. The inference is that males and females begin with approximately the same amount of natural ability. However, because of societal guidelines or role expectations, males and females develop role perceptions compatible with those of our society, enabling either one to obtain a given expertise in a sex-related field. For example, a female going into "male-designated" occupations like those characterized by automotive information could have a minimum score of seven and succeed in one of the categories in the cluster characterized by automotive information. If we look on page A2-54, Table 16 in Technical Research Note 74-3 (the Use of Areas is Dependent upon the State in which a Counselor is Living), we see that the mean (M) for 12th grade females in automotive information is 8.56 (rounded to 9) and the standard deviation (S) is 3.68 (rounded to 4). If we subtract 1/2 standard deviation from the mean (−1/2 of 4), a result of 7 is obtained. Therefore, a female who has a raw score of 7 in Automotive Information is in the 37th percentile for her sex but only in the 19th percentile for the 12th grade combined. This indicates that caution is necessary when interpreting scores of individuals who plan to enter an occupation characterized by a single sex.

For males, a one standard deviation below the mean would be appropriate as a counseling guide. However, caution is indicated in use of these low scores as a cut-off because of the confounding effects of affect and lack of learning experiences. This is indicated because of the probability that—at these scores (i.e., lower forties)—some males may not have had experience in certain fields to know too much about the areas in question. The information may have come to him through vicarious association. In addition, as with females, non-cognitive factors could influence a decision to enter any field associated with such areas.

Part II – Interpretation using proposed Composites.

In order to interpret ASVAB-2 scores for students who desire to enter those fields which the proposed composites tend to predict, one must select the appropriate raw score from the counselor's printout (a sample is shown in Figure 2) for each of the subtests in the composite which relates to the vocational area desired.

Referring to Figure 2, if an individual selected the vocational area, Data Processing (see Expectancy Table Appendix 1), one should take the raw scores for Space Perception (SP), Mechanical Comprehension (MC) and Electronics Information (EL) and substitute these raw scores into the composite of SP+MC+EL; SP=22, MC=07 and EL=12 (SP+MC+EL=22+07+12 =41). Now refer to Appendix 1 for the Data Processing Expectancy Table. A raw score of 41 lies within the raw score interval of 36-45. A cursory look would indicate a "good" chance for success in this field. A closer look indicates the individual would have an 87% chance of passing this type of course with a grade of C or better; or his or her probability of making an "A" is approximately one out of five students; for making a "B" his or her probability is approximately two out of five students; for making a "C" his or her probability is approximately two out of five students; for making a "D" his or her probability is approximately one out of eight, and his or her chance of making an "F" is one out of one hundred students who score within this interval. Remember – these are probabilities shown in the expectancy tables and should not be used as precise or absolute data. Career and/or vocational counseling should encompass a broad conceptualization of the psychological and environmental press in order that a realistic outlook may be achieved by the student for himself in the "world of work."

Summary

The proposed ASVAB interpretive process is summarized in Table 2. The table is presented by sex and by current and proposed composites. For the GT and CL composites, the interpretation should be the same for both male and female. For the current composites of MM, EL and GM, the interpretations differ for male and female. The interpretation of scores for areas characterized by the proposed composites is the same for both male and female. Caution is warranted when using certain subtests as they have a tendency to underestimate a female's potential.

Figure 2. Sample Counselor Printout

FURLONG, BILL G.	FURLONG, BILL G. M11065386066 15JAN73
MO MEC 20 ASVAB-2	CS69/93/91/95 WK18/78/74/74 AR24/95/94/92 5JAN73
ELEC 38 15JAN73	RAW/NATL/GRADE/GRADE-SEX ASVAB-2
GEN MEC 75	TK11/53/49/21 SP22/92/91/88 MC07/14/12/07
CL ADM 94	S113/55/52/25 A109/28/23/08 E112/49/43/21
GEN TECH 94	ELEC-38 MM-20 GM-75 CL-94 GT-94

TABLE 2
SUMMARY INTERPRETATIVE CHART

	SEX	
	Male	Female
GT and CL	Take mean for grade or national, whichever is appropriate, and subtract from it one standard deviation. This will give an indication of a minimum cut-off score. For cross-reference, refer to the appropriate expectancy table and match score with class interval. Read across chart for expected success level.	
MM, EL and GM	From the mean score of the males, subtract one standard deviation. This will give the minimum score for success in a particular vocational course for males. Cross-reference the score in the expectancy table appropriate for the vocational area.	From the mean score of the females, subtract one-half a standard deviation. This will give the minimum score for success in a particular vocational course for females with respect to male-oriented courses. Cross-reference the score on appropriate expectancy table for female-oriented courses, i.e., Clerical Processes, Cosmetology, Health Occupations, Nursing.
Proposed Composites	Interpretations of scores in vocational areas characterized by a proposed composite should be done by an expectancy table for both male and female. The proposed composites comprised of Mechanical Comprehension (MC), Space Perception (SP), Automotive Information (AI), Electronic Information (EI), Tool Knowledge (TK) and Shop Information (SI) will indicate an underestimation of the females ability by one class interval when using expectancy tables. The proposed composites comprised of Coding Speed (CS), Word Knowledge (WK) and Arithmetic Reasoning (AR) should give a realistic indication for success in the appropriate course.	

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